

the Focus of the incident Rays, the point  $q$  shall be the Focus of the reflected ones.

Fig. 6.

*Cas. 3.* Let  $ACB$  be the refracting Surface of any Sphere whose Center is  $E$ . In any Radius thereof  $EC$  produced both ways take  $ET$  and  $Ct$  severally in such Proportion to that Radius as the lesser of the Sines of Incidence and Refraction hath to the difference of those Sines. And then if in the same Line you find any two Points  $Q$  and  $q$ , so that  $TQ$  be to  $ET$  as  $Et$  to  $tq$ , taking  $tq$  the contrary way from  $t$  which  $TQ$  lieth from  $T$ , and if the Point  $Q$  be the Focus of any incident Rays, the Point  $q$  shall be the Focus of the refracted ones.

And by the same means the Focus of the Rays after two or more Reflexions or Refractions may be found.

Fig. 7.

*Cas. 4.* Let  $ACBD$  be any refracting Lens, spherically Convex or Concave or Plane on either side, and let  $CD$  be its Axis (that is the Line which cuts both its Surfaces perpendicularly, and passes through the Centers of the Spheres,) and in this Axis let  $F$  and  $f$  be the Foci of the refracted Rays found as above, when the incident Rays on both sides the Lens are Parallel to the same Axis; and upon the Diameter  $Ff$  bisected in  $E$ , describe a Circle. Suppose now that any Point  $Q$  be the Focus of any incident Rays. Draw  $QE$  cutting the said Circle in  $T$  and  $t$ , and therein take  $tq$  in such Proportion to  $tE$  as  $tE$  or  $TE$  hath to  $TQ$ . Let  $tq$  lye the contrary way from  $t$  which  $TQ$  doth from  $T$ , and  $q$  shall be the Focus of the refracted Rays without any sensible Error, provided the Point  $Q$  be not so remote from the Axis, nor the Lens so broad as to make any of the Rays fall too obliquely on the refracting Surfaces.

And by the like Operations may the reflecting or refracting Surfaces be found when the two Foci are given, and

and thereby a Lens flow towards or from

So then the rays fall upon any Plane before their Incidence they shall after Reflection towards the Point  $q$  the incident Rays the reflected or refracted so many other Points whether the reflected the Point  $q$  is equal For if that Point refracting Surface incident Rays flow towards the Point incident Rays flow and the refracted when  $q$  is on the

Wherever the Rays meet again in the converge by Reflexion of the Object

So if  $PR$  represent a Lens placed in a Chamber, where the of that Object are the Point  $q$ ; and for the Light the Object  $PR$  will appear